

Fig. 1

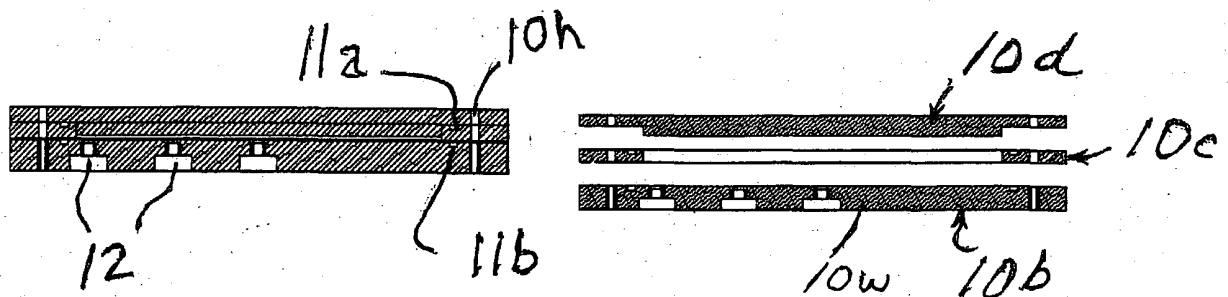


Fig. 1A

Fig. 1B

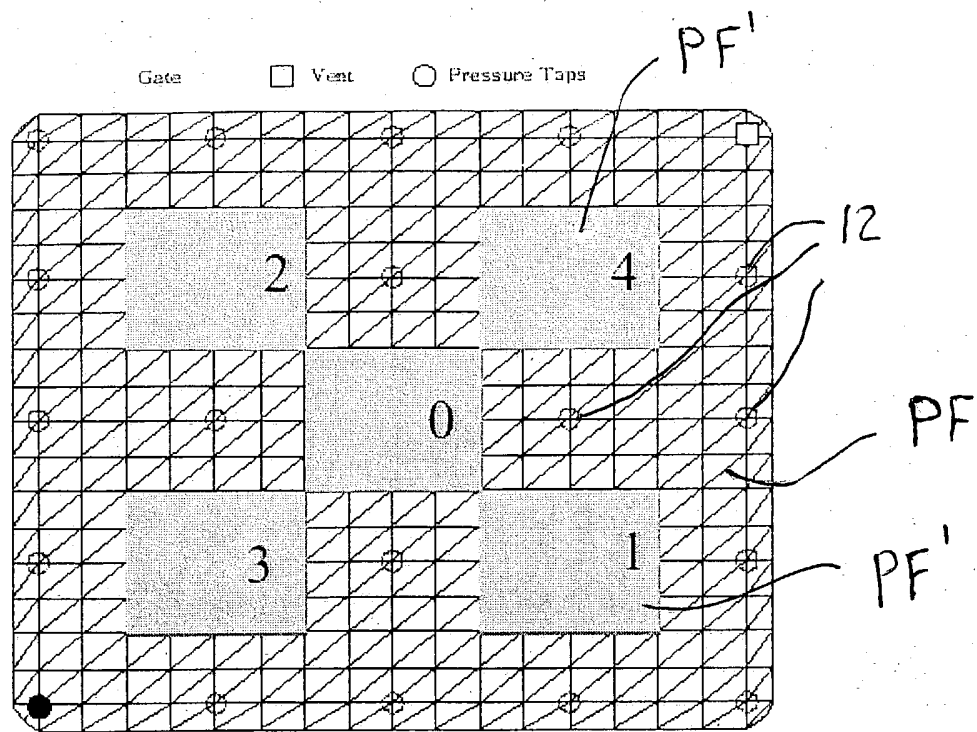


Fig. 3

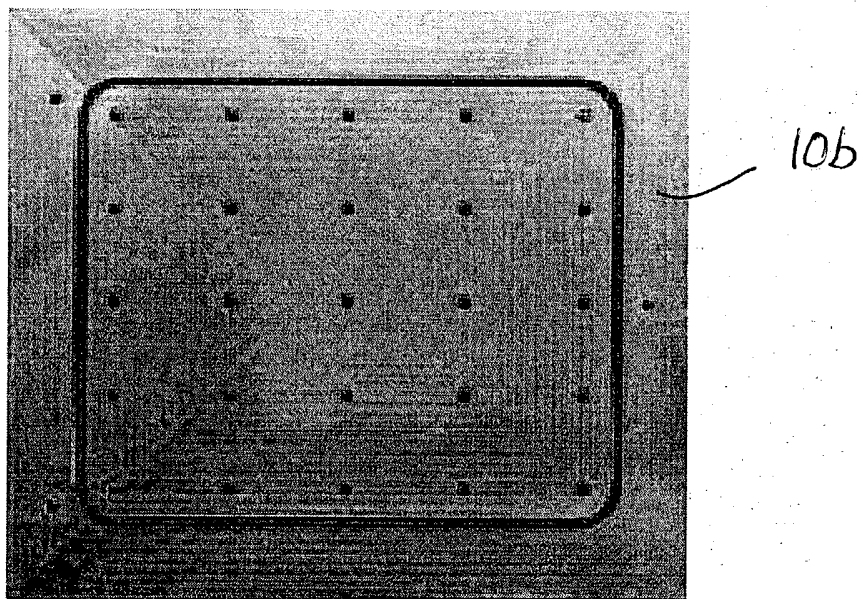


Fig. 2

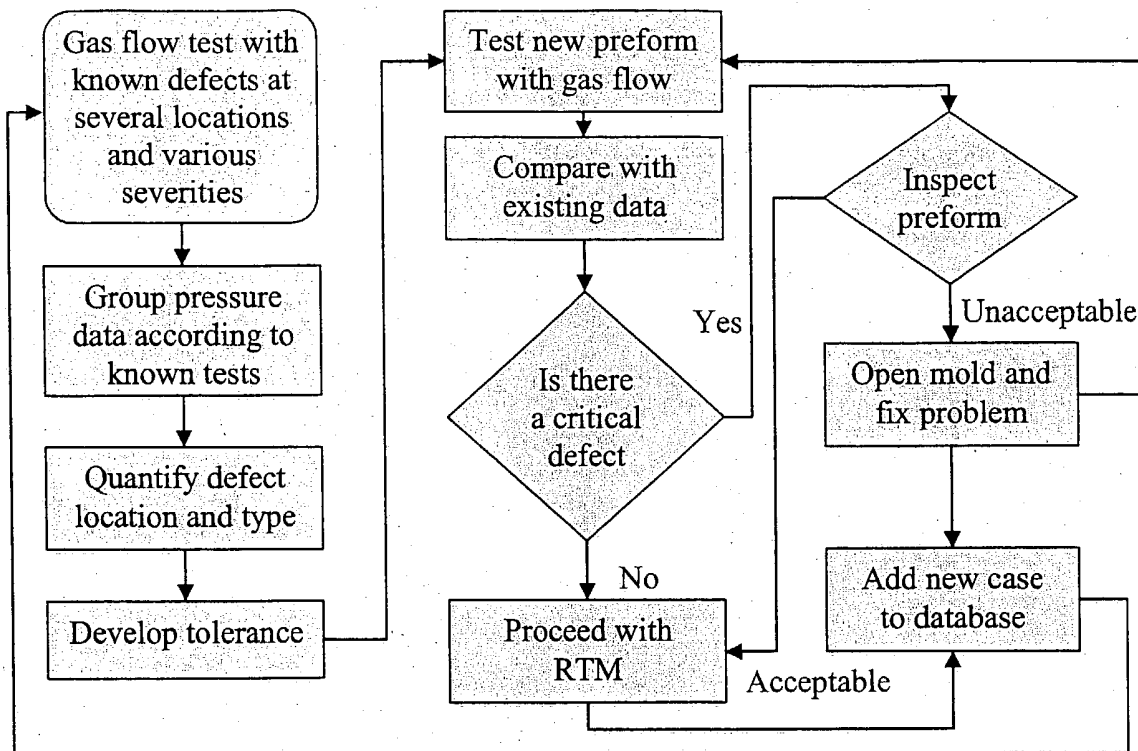


Fig. 4

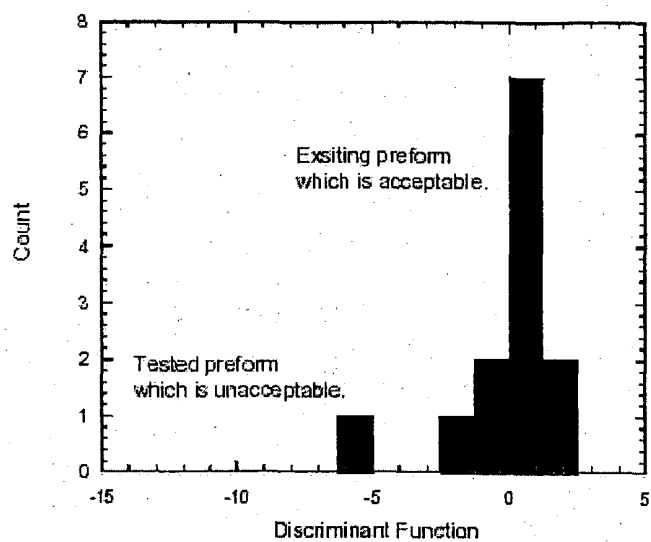


Fig. 5

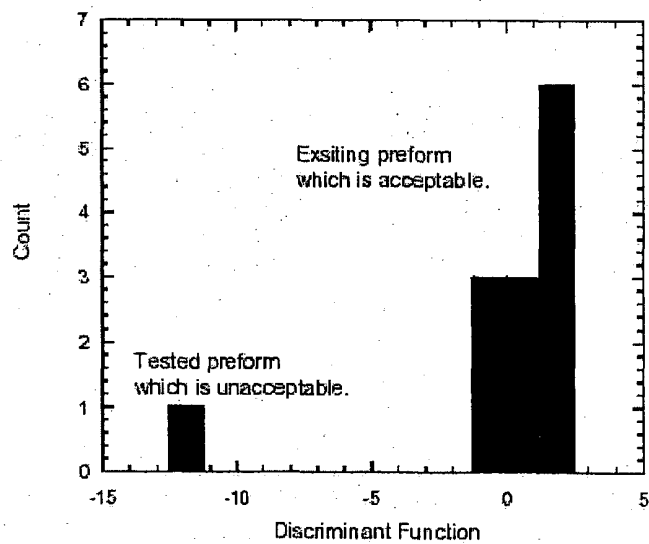


Fig. 6

$$\begin{aligned}
DF_{km}^1 = & 1.991 P_{1km} - 0.753 P_{2km} - 0.04 P_{3km} + 1.402 P_{4km} - 0.537 P_{5km} + 0.393 P_{6km} + \\
& 5.613 P_{7km} - 0.995 P_{8km} + 2.135 P_{9km} + 2.789 P_{10km} - 5.848 P_{11km} + 1.325 P_{12km} + \\
& 2.964 P_{13km} + 0.122 P_{14km} - 0.27 P_{15km} - 0.371 P_{16km} + 6.723 P_{17km} - 2.207 P_{18km} - \\
& 1.752 P_{19km} - 0.214 P_{20km} - 0.407 P_{21km} - 1.3 P_{22km} + 0.605 P_{23km}
\end{aligned}$$

$$\begin{aligned}
DF_{km}^2 = & 1.784 P_{1km} + 1.279 P_{2km} - 0.768 P_{3km} - 3.111 P_{4km} - 0.436 P_{5km} - 3.127 P_{6km} - 3.65 \\
& P_{7km} + 2.997 P_{8km} + 0.626 P_{9km} + 0.732 P_{10km} + 2.219 P_{11km} + 3.376 P_{12km} + 1.199 \\
& P_{13km} + 1.957 P_{14km} + 0.168 P_{15km} - 1.73 P_{16km} - 8.635 P_{17km} + 0.24 P_{18km} - 0.431 \\
& P_{19km} + 0.324 P_{20km} + 0.38 P_{21km} + 3.014 P_{22km} + 1.981 P_{23km}
\end{aligned}$$

$$\begin{aligned}
DF_{km}^3 = & -0.219 P_{1km} + 0.238 P_{2km} + 1.271 P_{3km} + 0.899 P_{4km} - 0.559 P_{5km} + 2.476 P_{6km} + \\
& 0.42 P_{7km} + 0.456 P_{8km} - 1.31 P_{9km} + 2.481 P_{10km} - 4.338 P_{11km} - 3.783 P_{12km} - 0.003 \\
& P_{13km} + 0.014 P_{14km} - 0.567 P_{15km} + 0.514 P_{16km} - 0.712 P_{17km} + 2.089 P_{18km} + 0.489 \\
& P_{19km} + 0.822 P_{20km} - 0.622 P_{21km} + 2.626 P_{22km} - 1.98 P_{23km}
\end{aligned}$$

Fig. 7

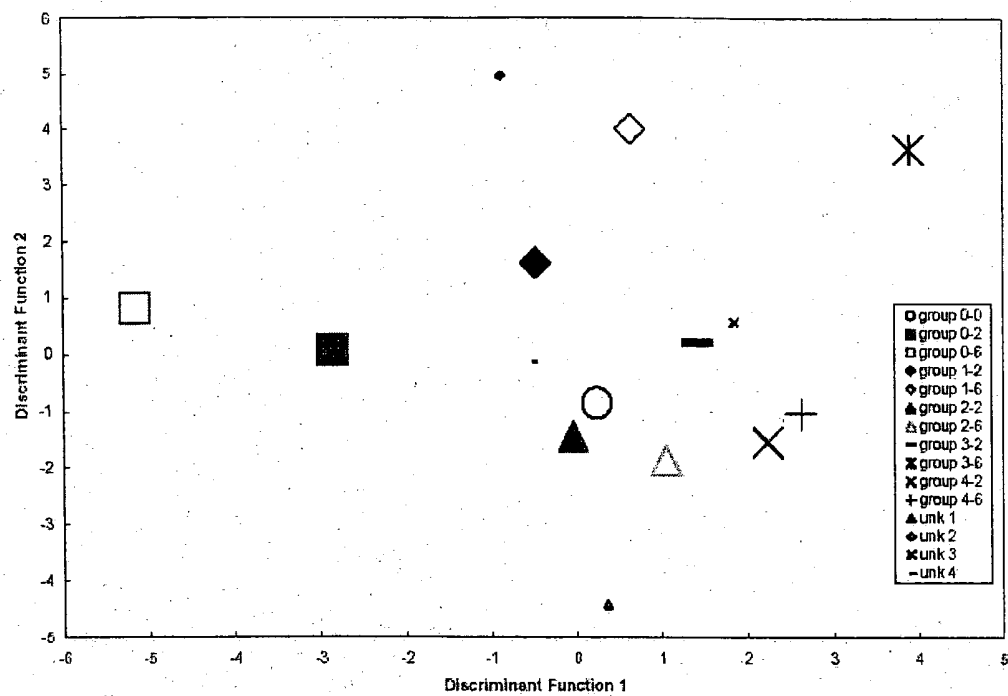


Fig.8 Canonical discriminant function scores for unknown defect and group centroids

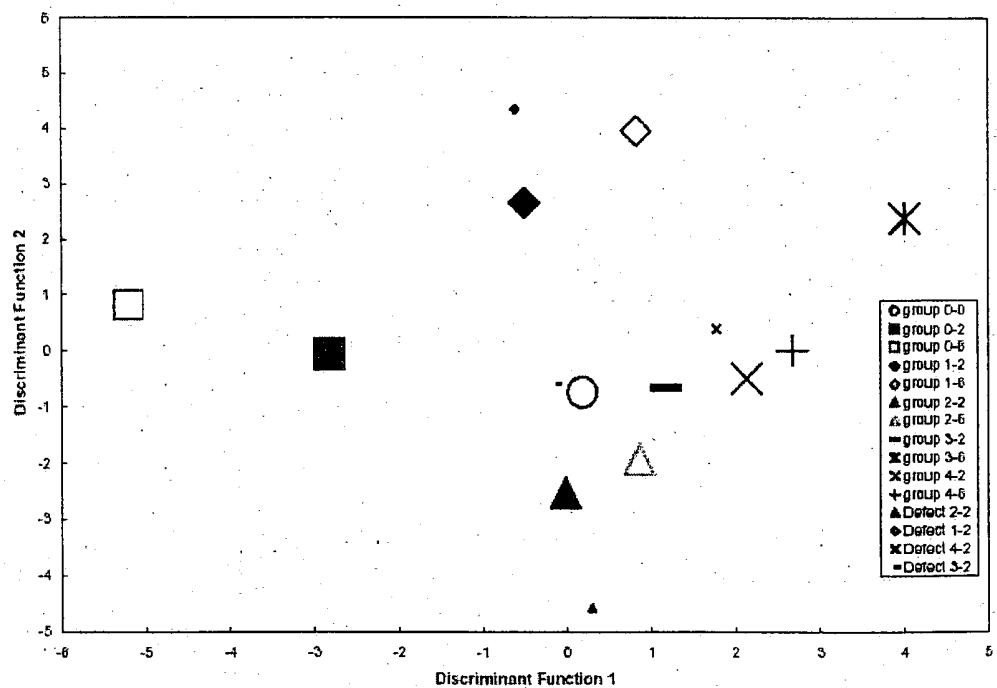


Fig.9 Canonical discriminant function scores for classified defect and group centroids